

1867
No 4 Simon
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Read. March 10th 1828
Inaugural Essay
On

Fractures Dislocations &c:
for the
Degree of Doctor of Medicine
in.

The University of Pennsylvania.
By

Ruben A. Gentry
of
Williamson County Tennessee.

Philadelphia January 15th
1828

1841
Dec. 1st to 1st
Chapman's Bay
No.

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No. 1

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William Henry Bay
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1st observation bearing is
No.

To

Benjamin W. Dudley, M.D.
Professor of Anatomy and Surgery in
Transylvania University.

Dear Sir,

Your unvaried endeavours, as a public and private preceptor in conducting me through the bewildering labyrinths of sophistry and error, to those simple and elementary truths, from the lights of which, the scientific physician can alone expect to direct his way; together with many acts of individual kindness, have fixed upon my memory, feelings of gratitude and affection, which will only cease with the term of my existence. For these multiplied benefits, permit me to inscribe to you this humble epay—as an assurance of the seated estimation in which I hold you, as an ind

individual of pre-eminent worth, talents, and attainments.

That the brilliancy of your professional career may be unclouded; that the profession may ever be proud of your superior talents, extensive acquirements, and great usefulness; and that your life may be long, prosperous, and happy, is the heart-felt wish of

Dear Sir,

Your sincere friend, and
Affectionate pupil,
R. D. Gentry.

Fractures

A fracture is a solution of bone into two or more fragments. When the bone alone is divided, the fracture is called simple. When in addition to the solution of bone, the soft parts covering it are divided, the injury receives the appellation of compound fracture. When the bone is broken in several places, or when the fracture is accompanied by laceration of large vessels, or by dislocation, it is termed complicated. In addition to the simple, compound, and complicated, according to their direction, fractures are called transverse, oblique, longitudinal, &c.

External violence and muscular action, separately, and combined, are the causes of fractures. Swelling and deformity, may be considered the most unequivocal signs of fracture. To these may be added, as occurring in many

1844

I have been thinking of you very much lately
and wondering how you are getting on
I hope you are well and happy
I have been very busy lately
but I have managed to find some time
to write you a few lines
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Swelling, pain, swelling, and inability to move the limb.

Generally, the first appearance which presents itself to the surgeon, in his examination of a fracture, is the displacement of the ends of bone; hence, the first indication, is the reduction of the fragments to their natural situation. After the ends of bone are placed in apposition, the contractile power of the muscles, has a constant tendency to separate them, and when separated, to draw them into their substance, which they irritate, and excite to additional contraction. In this way, the limb is sometimes reduced to two thirds its original length, and the soft tissues very much lacerated. From these facts it is obvious, that the complete suspension of muscular action, is one of the most important indications, in the treatment of fractures.

When violence has been offered any part, not

are, to restore the part to its pristine healthy condition, instituted a protrusional action, and when unrestrained, generally transcends the bounds compatible with speedy recovery. Now as a high grade of inflammation, is known not to be in harmony with the recuperative process, the prevention, or when it has occurred, the removal of it, is by some the most important indication in the treatment of fractures. The pain attending fractures is in some cases almost insupportable, and the removal or mitigation of it, not only conduces to the comfort of the individual, but guarantees the favourable termination of the accident. To fulfil the first indication, we resort to elevation, counter extension, and Coaptation. To suppress muscular action, and control inflammation, I recommend the bandage or roller

1847
The first of the year is in a state of
great excitement, and the people are
all looking forward to the
arrival of the new year with
great interest. The weather is
very cold, and the snow is
deep. The people are all
dressed in heavy clothing, and
the streets are very muddy.
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the streets are very muddy.

Having recommended the bandage, I deem it necessary, and not irrelevant to the subject, to make a few remarks on its application.

The salutary effects of the bandage depend on its judicious application, and I have no doubt, that the consequences arising from its improper application, have caused it to be misunderstood and misused by many, as producing very serious and pernicious consequences.

A very common mode of applying it, is to bind it tightly around the part sustaining injury, leaving the parts below, unprotected by it. In this way, it acts precisely as a ligature, producing derangement in the circulation, particularly of the venous blood, and consequent tumescence, sloughing, and mortification.

In applying the bandage, we should invariably commence directly at the extremity of the limb, and taking care to make regular



and uniform compression, by causing hoap of
each turn by the succeeding one, should con-
tinue it some distance above the injured
part. When used in fractures, the limb should
be kept in the extended position, and the band
in perfect apposition, during its applica-
tion, and it should extend sufficiently high,
to paralyze all the muscles concerned in the
motions of the limb. It should be reapplied
every six or eight hours, or so often as it may
become loose in any part, so as to give uni-
form pressure.

When the bandage is thus applied, by its com-
pressing influence, the muscles are in complet-
ely paralysis, or at least reduced to a state of
perfect quiescence, and independent of any
effect of a well adjusted roller, by its com-
pletely suspending muscular action, the great
resort to the quiet condition of the



bone, will be effectually removed, all danger
of displacement, and the pernicious conse-
quences of such displacement, will be obviated,
and thus, a very great desideratum in the
treatment of fractures will be obtained.
But this is not the only temporary effect of
the bandage. By its equal compression, the
capacity of the vessels will be diminished, the
free influx of blood will be prevented, a pos-
sible quantity that is essential to the restorative
process, cannot be impeded through them, ac-
cumulation and engorgement cannot take
place, and inflammation and swelling cannot
supervene. But admitting that they were ac-
cessed, the bandage is equally proper; for by
its action on the vascular system, it will speedi-
ly disperse inflammation; and as it increa-
ses in an astonishing degree the activity of
the constituents, tumefaction will quickly di-
appear.



The bandage stands the sensibility of the part
to which it is applied, and elicits, by prom-
ting the superintention of a high degree of in-
flammation, the very exquisite sensibility
which attends ecchyma in a long action,
and thus prevents the occurrence, or produces a
diminution of pain, more certainly than any
narcotic, and, I am constrained to pronounce
it, the most certain anodyne in fractures.
To illustrate my views, and to demonstrate the
efficacy of the plan of treatment recom-
mended, I will insert a case; and as ecchyma, fra-
ctures are acknowledged to be of most diffi-
cult management, and most apt to terminate
in deformity, the case chosen is of that char-
acter.

In the fall of 1820, a servant boy, and nephew
of my friend, the property of a respectable pl-
ant in the vicinity of Lexington Kentucky,



was thrown from his horse in the streets of
Sittington by the fall, his thigh was fractured
at or a little above its middle. Dr Dudley
was regarded to visit him. The fracture being
of the oblique character, the inferior portion
was drawn two or more inches upon the poster-
ior surface of the superior fragment. To re-
laxation and counter-extension the fragments were
reduced to their proper situation, and be-
ing so retained by the same forces, a band-
age was applied from the extremities of the
tendons to the superior part of the limb, and then
encompassed several times around the pelvis
and thus made secure. To prevent displace-
ment from any involuntary movements of
the body, during sleep or otherwise, our spon-
gibles, placed on the sides of the body, were secured
with a band or two around the chest, and then bound
on with moderate firmness. On the seventh or



eightth day the discharges were renewed; and by
their reapplication at three or four sweating
periods, ten days elapsing between the re-
newals; the boy was restored to perfect health,
without the slightest deformity, and without
the production of a single unsuspicious symptom
during the progress of cure.

Without speaking particularly of the exact
use of all the different bands, I will here
remark, that the same principles should gov-
ern us in all; that in some cases, a modifi-
cation of Stints and position will be
necessary, as in those of the forearm, &c.
After these remarks, which were made with
more particular allusion to simple fractures,
I will now say a few words on compound re-
actures.

It is in these that we meet with laceration
muscles, ruptured blood vessels, and infe-



nerve; and these are the in, which which
more than any other, elicit the sympathies of
the benevolent and philanthropic practitioner,
and call most loudly for assistance from
the surgeon. Her, in accordance with the most
passionable mode of treatment, placed the
limb in the most easy and convenient posi-
tion, and endeavoured to moderate inflam-
matory action, by leeches, docters, &c; and
after ^{the} subsidence of inflammation, placed the
limb in apposition, and applied his dressing:
a false and inefficient practice.

What did the Surgeon fear in compression, i.e.
clases? High inflammation, and consequent
suppuration, deep-seated abscesses, sloughing,
sinuous ulcers, necrosis of the bone, caries,
or mal deformity, or at least, a protracted and
painful cure.

Now as the pathology of the affected tissue



taught us, that a high degree of inflammation, is not a necessary antecedent to the ^{disposition} of ossific matter, but on the contrary retards and hinders that process; I without hesitation express it as my decided opinion, that it would be better, after the removal of any detached portions of bone, immediately to place the fragments in their proper position, and having drawn the divided ends, and secured them by adhesive straps, by the immediate application of the bandage, to procure union by adhesion, and thus convert the compound into the simple fracture, than to subject the unfortunate sufferer to the torturing pains accompanying high inflammatory action, to a long term of acute distress, and to the liability to the evils above mentioned, all of which, not unfrequently present themselves in



As the common mode of treatment, but none
of which could take place, under the influence
of a properly adjusted bandage.

After these salutary remarks on compound
fractures, I will proceed to make a few obser-
vations on fractures of the pelvis.

Transverse fractures of this bone are more com-
mon; but sometimes it is fractured perpendicu-
larly. When the fracture is of the transverse
character, by the action of the rectus, vasti,
& Crural's muscles, the superior ^{fragment} is driven from
the haec, in a degree proportional to the se-
verity of injury sustained by the capsular lig-
ament, and the continuous aponeurosis cover-
ing it.

The dissepiment divides the two portions of bone,
the situation of the superior fragment in
the anterior part of the thigh, and the im-
possibility to return the leg, will clearly indic-



ate the nature of the accident.

So an examination of the plans of treatment recommended by different authors, would be a very good expenditure of time. I will merely remark, that so far as my knowledge extends, they agree in saying removal of bones is rarely if ever effected; and ^{that} some of the highest authorities, after the subsidence of inflammation, which they endeavour to expedite by leeching, evaporating salines, &c, approximate the ends of bone, and attempt to secure them in their proper position, by pads, ticks, straps, &c, &c; and then endeavour to procure union by ligament or bone, as the case may be; and prescribe the early application of the bandage, as likely to increase pain and swelling, and to induce a sloughing condition of the parts; effects, which the best usage and a properly applied, never produces.



To prevent the occurrence of all untoward symptoms, and to prevent reunion by bone, the bandage should be immediately applied. Commencing at the toes, it should be continued to the internal edge of the fractured leg; another bandage should be passed around the pelvis that it may be secured, and then continued down the thigh until it reaches the superior margin of the patella, an assistant at the same time drawing the fragments in contact; it should then be so applied as to form the figure of eight, and afterwards passed in spiral turns around the whole.

Without recapitulating the effects of the bandage, I will just remark, that the action of the muscles is the great obstacle to the perfect apposition of the divided surfaces, and a high degree of inflammation.



mention the only circumstance endangering the favourable termination of the accident, these difficulties will be perfectly obviated by the compressing and paralyzing influence of the bandage, and in case of resistance to, the patient will be firmly united by long matter.

During the progression of recovery, the leg should be extended in the back, and the thigh placed on the pelvis. At the expiration of the fourth week, slight passive motion should be commenced, and conducted with great caution. It should be employed every day, until the cure be complete.

As demonstration of the efficacy of the treatment recommended, I will here remark, that Professor Dudley of Maryland University has treated a variety of cases in the manner above described, and has invariably



secreted union by adheſive matter.

Compound fractures of the patella are more difficult to manage; and it is in these that the bandage promised to be pre-eminently useful.

The consequences most to be apprehended in these cases, are irreparable inflammation, suppuration, or suppuraton, with the highest degree of constitutional irritation.

Now as there is no such thing in nature, as an effect without a cause, and as we know that the suppuration and constitutional irritation are effects of the local inflammation, to obviate them, we have nothing to do but to prevent the occurrence of their cause; and this will be ^{more} certainly effected by the roller, than any mode of practice that can be adopted.

After securing the disjuncta integuments in contact by adhesive straps, the bandage sh.



could be applied as directed in cases of simple fracture. The result of this treatment will be union of the distal part by adhesion, suppression of the inflammation and establishment of a cicatrix which is usually sufficient to insure, and in a few weeks, perfect restoration of function.

The same indications for the management of dislocations of the patella, are equally applicable to those of the os femoris, and if strictly adhered to, the results will be similar. From the subject of fractures, I will proceed to make a few remarks on luxations.

Dislocations

A dislocation is a displacement of the articulatory portion of a bone from the surface on which it was naturally received. When in allusion to the replacement of the articulatory surfaces, the cavity of the



joint is exposed by a solution of continuity in the skin or capsular ligament, it is called compound dislocation.

The consequences to be apprehended from these dislocations, particularly those in the compound, are, a severe inflammation of the articulation, ligaments, and synovial surface, suppuration, great constitutional disturbance, abscess about the joint, inflammation of the lungs, prostration from the ends of bones exposed, of their cartilages by ulceration or necrosis, and finally, ankylosis.

In these cases the treatment will be various, and valuable. If the immediate application be a case of synovia and hemorrhage will be prevented, if they have occurred, their further progress will be arrested, and the swelling & tenderness reduced by the increased action of the vessels, it will in some degree act



as an artificial capsule, the divided parts will be retained in contact, & in motion, & the will be easily restored, union by the first intention will ensue; and the parts will be settling restored to their healthy condition, without the interference of a single physician in calculating & distressing nature in her secondary operations.

From the foregoing remarks it will be observed, that I consider the bandage to be the most accidental mean in supplying the second intention in the treatment of dislocations, which is the insertion of ligaments.

The first indication, is the reduction of the dislocated bones to their natural situation. This will be accomplished by extension and counter-extension, aided when necessary, by traction, warm bath, nauseating medicines, &c.



Were it necessary, I could here detail several cases of compound dislocation, which were treated by the bandage with perfect success, and without the occurrence of any of the unpleasant symptoms, which so frequently follow these accidents.

Gunshot Wounds.

By many of the highest authorities it is said, that a gun shot in its passage through any portion of the body, destroys the vitality of the parts immediately in its tract, and that sloughing is a necessary step towards reparation or cure.

As I have neither time nor disposition to enter into a particular examination of the opinions of the many authors on this subject, I will merely remark, that I believe many of them to be incorrect, and that they were based on incorrect views of the pathology of gunshot injuries.



A gun-shot laceration wounds the parts through which it passes, the capillary vessels in its route are lacerated and paralyzed, their capacity for the permeance of their contents is thereby suspended: thus capillaries are incapacitated, they cannot receive blood and are unable to expel it, they become engorged, and by their engorgement their vitality is finally exhausted; the blood stagnates and coagulates, and sloughing so ensues.

When nature is assisted, this series of events does take place; and then it is said, that a gun-shot heals the part through which it passes, and that sloughing is essential to recovery. These assertions are erroneous; for instead of the sloughing being a necessary consequence of a gun-shot wound, it is nearly a consequence of foolish and inefficient prac-





ally accomplished by the solution, when these
wounds are so situated as to admit of applica-
tion. By its compression coarctation will
be prevented, the vessels over the deep wounds
are strengthened, and enabled to circulate
their fluids and throw out adhesion matter,
and union by the first intention will quick-
ly re-establish the continuity of parts.

The correctness of these views, or at least the cor-
rectness of the treatment, has been incontroverti-
bly proven, by many cases in the practice of
the distinguished Professor of Surgery at the
Imperial University. In his lectures on gun-
shot wounds, he stated, that in a gentleman, who
in person was consulted, receiving the ball of a
musket in the right thigh, the ball in
its passage divided the femoral artery.
The hemorrhage being instantly arrested by pres-
sure on the artery at its passage over the



placed a compress was placed over the wound and in the direction of the artery; and the bandage applied from the inner corner to the superior extremity of the limb.

The wound of the gun-shot healed by the first intention; and in three or four weeks, the patient was perfectly restored and resumed all his business.

Let it should be said that there might have been something peculiar in this case, and that it does not affect the general position, that at sloughing and supuration are necessary consequences of gunshot wounds, I will remark, that Dr. Ferrius has treated a variety of cases in the same manner; and with a uniformity of success, that would overcome any tolerable degree of incredulity and satisfy any one of the efficacy of the treatment; unless it be those, whose opinion



ious are formed by prejudice rather than judgment; or rather those, who with a blind pertinacity adhere to the precepts and opinions of their predecessors, rather than form opinions for themselves.

In the foregoing pages I have said nothing of Constitutional remedies, but I would not have it inferred that I wish to exclude them, or deem them unessential; on the contrary, I believe them indispensable in many cases—but as the injuries of which I have treated occur in constitutions of very different degrees of excitability; and as the same individual is at different periods in quite opposite states of susceptibility to the influence of exciting causes, I shall merely remark, that when general fever excites the local violence, as it very frequently will in full robust habits, it will be



necessary to use the lancet, to purge, to re-
sate, and in short to enforce the antiphlogis-
tic regimen to the requisite extent that these
accidents may prevent themselves in feeble de-
bilitated constitutions; in which the powers of
nature are so prostrated that stimulants, to-
nics, and a free use nutritious food may
all become necessary: in such cases nature
must be supported and elevated to the
healing point that these injuries will oc-
casionally be met with in individuals la-
bouring under chylific derangement
such cases it will be expedient to correct
the morbid condition of the stomach, li-
ver, &c. by the judicious exhibition of the
emetic, Calomel, the mineral acids, &c.
In fine, the good sense of the surgeon must
adapt his remedies to the peculiari-
ties of each case. With these remarks I



close my paper, at the same time apolog-
izing for its many imperfections.

1787
The first of the year
1787

No 115

C.

27 Simon-

prophete -

Post - March 10th 1828

